DURHAM COUNTY

Triangle Wastewater Treatment Plant

PERFORMANCE ANNUAL REPORT

JULY 2017—JUNE 2018

Triangle Wastewater Treatment Plant
5926 NC Hwy. 55 E.
Durham, NC 27713
(919) 560-9033

Permits:
Wastewater Treatment Plant: NC0026051

Collection System: WQCS00038

Stormwater : NCG110054

Reclaimed Water: WQ0032821

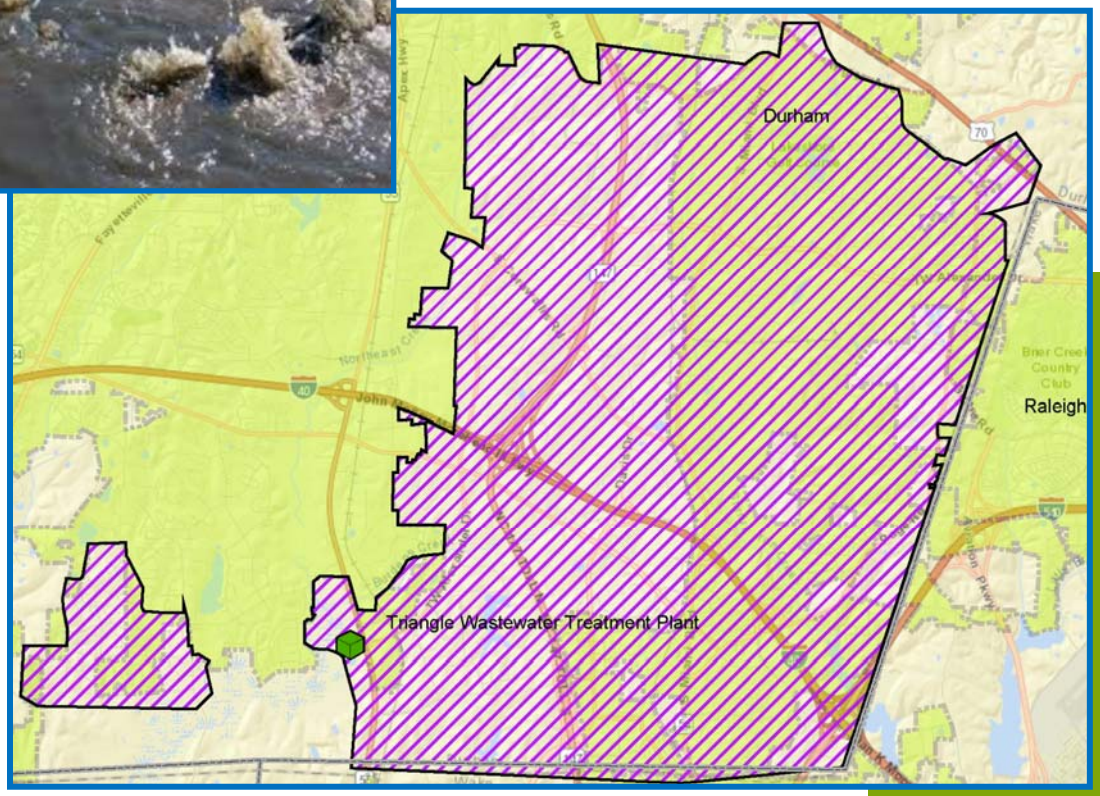
Owned and Operated by:

Durham County Engineering & Environmental Services Utilities Division

Contact:
Stephanie Brixey
Deputy Director

Durham County Utilities is successful at maintaining a healthy environment and cost-effective utility system because the responsibility is shared amongst all who live and work in Durham County's Triangle Wastewater Treatment Plant service area. More often than not, sewer spills are reported by vigilant and watchful citizens who contact us with concerns. We heavily rely on our citizens to bring issues to our attention so we may respond and rectify any possible overflows and environmental hazards quickly and efficiently. Call us if you see or experience any of the following: drain backups, water leaking from manhole lids or cleanouts, or unusual odorous wet areas.

The Durham County wastewater collection and treatment system serves over 10,000 residential, commercial, and industrial customers in Southeast Durham County, including the Research Triangle Park.



Durham County TWWTP Service Area

Collection System

Durham County owns and maintains a wastewater collection system which includes 95 miles of gravity sewer, 9 miles of pressurized force mains, and 13 pump stations.

In the past 12 months Durham County had two reportable spills.

- On February 27, 2018, a spill estimated at 6,000 gallons of wastewater occurred resulting from root intrusion into a sewer lateral line.
- On March 13, 2018, a spill estimated at 250 gallons of wastewater occurred due to a discharge valve being left partially open while check valve maintenance was being performed.

The Durham County Utilities Division prides itself on providing a high level of customer service. All commercial and residential customers' questions and concerns are responded to in a timely manner. If you have a question or concern regarding the collection system, services or any item covered in this report, please call (919) 560-9033.

Reuse Water

The Triangle Wastewater Treatment Plant (TWWTP) operates a reuse water system. Some of the uses of this water include: landscape irrigation, industrial cooling, industrial process water and sewer cleaning. Approximately 110.7 million gallons of reuse water was distributed during the fiscal year.

Installation of a grinder at the SIC Pump Station.

Hopson Road force main connection.

Projects & Rehabilitation

Throughout the last year, the County has continued its efforts to rehabilitate aging collection system infrastructure and increase sanitary sewer capacity to facilitate economic growth in our service area. Some of these completed projects include:

- ⇒ **The addition of a grinder at the Stirrup Iron Creek (SIC) Pump Station to decrease solids buildup in the wet well;**
- ⇒ **The connection of the Hopson Road force main allowing for the abandonment of 2,600 feet of deteriorated pipe;**
- ⇒ **Stream bank stabilization around a high-priority gravity sewer main; and**
- ⇒ **Additional survey work to refine the SIC Pump Station sewer basin's hydraulic model.**

Over the next several months, SIC and Slater Road Pump Stations will be upgraded with new pumps and control panels to increase sewer capacity.

Biosolids System

The TWWTP generates waste biological residuals (approximately 600 million wet pounds per year), which are dewatered by centrifuges. The dewatered cake (approximately 14.5 million wet pounds per year) is transported to McGill's Composting, where it undergoes further biological treatment to produce a Class A biosolid. These biosolids are beneficially used as soil amendments in commercial landscaping and agricultural activities.

Ultraviolet (UV) Bulb System

The TWWTP was compliant in all sampling events for the past year, while treating 1.55 billion gallons of wastewater.

Treatment System & Process

The **Influent Pump Station (IPS)** is used to pump raw wastewater (sewage) to the treatment process to be biologically treated. The IPS is sized for 12 million gallons per day average flow.

The **Fine Screens** are used to remove fine materials from the wastewater such as grit, sand, egg shells, etc. All of the organic materials are washed off and used in the biological treatment process.

The **Five Stage Biological Nutrient System** is where all biological treatment takes place, such as removing ammonia through nitrification and denitrification processes as well as the removal of phosphorus.

The **Chemical Polishing** process removes any phosphorus that is remaining after the biological treatment process. Methanol is used in this polishing process to add additional BOD to support the denitrification treatment process.

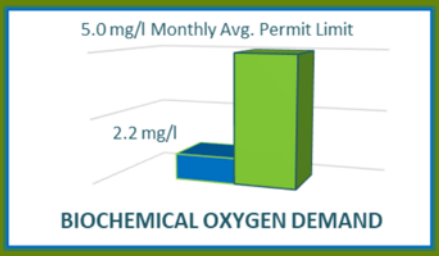
The **Clarifiers** are where the biomass is separated from the treated wastewater and then is returned to the BNR for further treatment.

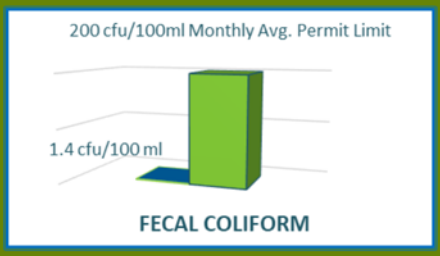
The **Tertiary Filters** are next in the clarification process which removes all remaining unsettled biomass in the treatment process.

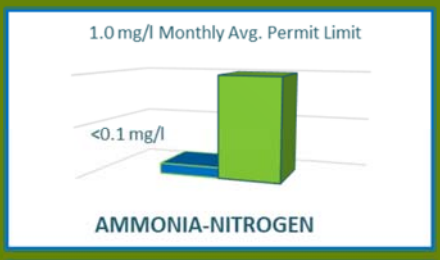
The **Ultraviolet Disinfection** treatment process is used to remove all disease causing bacteria without creating harmful by-products.

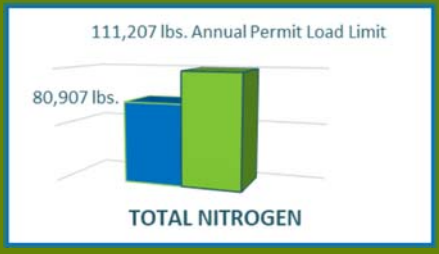
The **Reaeration** stage of the treatment process adds dissolved oxygen to the treated wastewater to meet required permit limits before it is discharged to Northeast Creek.

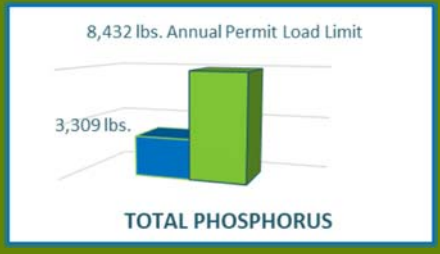
Effluent Annual Average Data











Clarifier

Lab & Pretreatment Program

The Triangle Wastewater Treatment Plant's (TWWTP) laboratory staff collects and analyzes wastewater samples as required by the NPDES permit and the reclaim water permit. Currently, the laboratory is certified by the Division of Water Resources Laboratory Certification Branch to analyze ammonia, biochemical oxygen demand, total residual chlorine, conductivity, dissolved oxygen, fecal coliform, pH, temperature, and total suspended solids. Staff determines the age and health of the activated sludge and identifies microorganisms, such as amoebae, bacteria, ciliates, flagellates, nematodes, rotifiers, and water bears.

The TWWTP implements an Industrial Pretreatment Program (IPP) to control pollutants which may cause pass through or interfere with the treatment plant's processes, which may contaminate sewage sludge, or potentially be hazardous to worker's health and safety. Currently, there are forty-eight permitted industries that are regularly inspected and monitored to ensure their discharges meet specific permit limits. Fourteen of these industries are Significant Industrial Users (SIUs). Biosafety Laboratories in our service area have also been identified and fifteen are currently permitted. Several of the Industrial Pretreatment Permit holders are required to certify that their facility has followed biosafety procedures consistent with the fifth edition of the Biosafety in Microbiological and Biomedical Laboratories, US DHHS -PHS, -CDC and -NIH for the deactivation of Biosafety Level 1, 2, 3 or 4 materials prior to discharge to the sewer system.

Grease clogged line.

Grease being cleaned from a sanitary sewer manhole.

Sewer overflows can cause health hazards, damage homes and businesses, threaten the environment, and local waterways and are costly to clean up for wastewater utilities.

Do your part to prevent overflows by following these simple guidelines:

- ⇒ **Collect fats, oils and grease (F.O.G.) in a container and dispose of it in the garbage.**
- ⇒ **Place food scraps in the garbage and use garbage disposals in your home as little as possible.**
- ⇒ **DO NOT flush wipes. Even if they say "flushable", disposable wipes will clog pipes. They are not biodegradable like toilet paper which breaks down at a much quicker rate, and can cause issues in the sanitary sewer.**
- ⇒ **Place ALL personal hygiene products and diapers in the garbage.**
- ⇒ **DO NOT pour hazardous materials down the drain.**
- ⇒ **Call 811 or visit www.nc811.org BEFORE you dig and protect your underground utilities from damage.**
- ⇒ **DO NOT plant trees and shrubs, or erect structures such as fences on or near manholes, sewer lines and easements.**

August 31, 2018

Notification:

This Performance Annual Report covering July 1, 2017 through June 30, 2018, was forwarded to the NC Department of Environmental Quality. Public Notice of the report was advertised in the Durham Herald Sun newspaper and is available for review at the following locations:

Clerk to the Board
200 East Main St.

Main Library
300 N. Roxboro St.

South Regional Library
4505 S. Alston Ave.

Website
www.dconc.gov

Certification:

I certify under penalty of law that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named system and that those users have been notified of its availability.

Stephanie Brixey
Deputy Director

EVERYONE, including **YOU**, can help prevent overflows!